

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



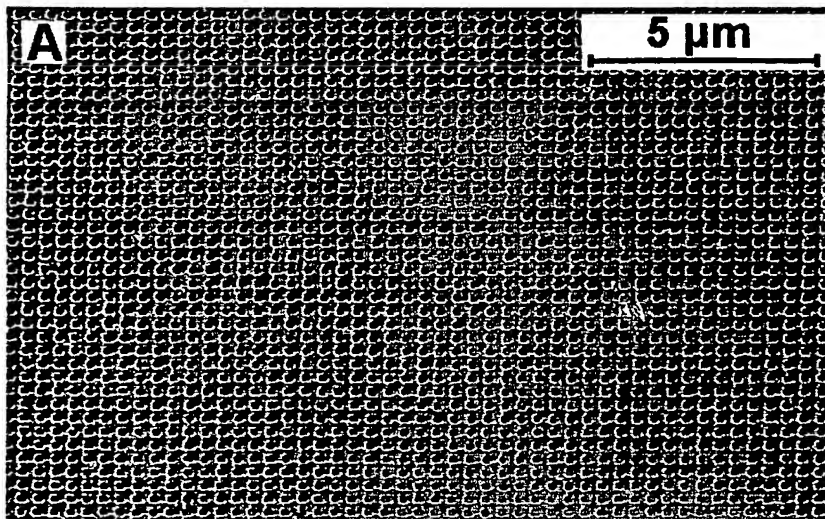
(43) International Publication Date
11 November 2004 (11.11.2004)

PCT

(10) International Publication Number
WO 2004/097894 A2

- (51) International Patent Classification⁷: **H01L**
- (21) International Application Number: **PCT/US2003/026322**
- (22) International Filing Date: **22 August 2003 (22.08.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
60/407,195 **28 August 2002 (28.08.2002)** **US**
- (71) Applicant (for all designated States except US): **UNIVERSITY OF PITTSBURGH [US/US]; 200 Gardner Steel Conference Center, Thackeray & O'Hara Streets, Pittsburgh, PA 15260 (US).**
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **KIM, Hong, Koo [US/US]; 348 Benedum Hall, c/o University of Pittsburgh, 3700 O'Hara Street, Pittsburgh, PA 15261 (US). SUN, Zhi-jun - [CN/US]; -, 348 Benedum Hall, c/o University of Pittsburgh, Pittsburgh, PA 15261, - (US).**
- (74) Agents: **BENT, Stephen, A. et al.; Foley & Lardner, Washington Harbour, 3000 K Street, N.W., Suite 500, Washington, DC 20007-5101 (US).**
- (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).**
- Published:
— without international search report and to be republished upon receipt of that report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **SELF-ORGANIZED NANOPORE ARRAYS WITH CONTROLLED SYMMETRY AND ORDER**



(57) Abstract: ~~An~~ ordered, single domain nanopore array having a macroscale area in a first material is provided. A method of making a nanopore arrays with a controlled pattern include providing a substrate comprising a first surface having a first patter, depositing a first material capable of forming nanopores onto said first-surface having the first pattern, and anodically oxidizing said first material to form the nanopore array with the controlled pattern in the anodically oxidized first material.

BEST AVAILABLE COPY